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ABSTRACT Title: Example of Occupational Surveillance in a Telemedicine Setting: Application of Epidemiologic Methods at NASA Johnson Space Center

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In 2010, NASA implemented Lifetime Surveillance of Astronaut Health, a formal occupational surveillance program for the U.S. astronaut corps. Because of the nature of the space environment, space medicine presents unique challenges and opportunities for epidemiologists. One such example is the use of telemedicine while crewmembers are in flight, where the primary source of information about crew health is verbal communication between physicians and their crewmembers. Due to restricted medical capabilities, the available health information is primarily crewmember report of signs and symptoms, rather than diagnoses. As epidemiologists at NASA, Johnson Space Center, we have shifted our paradigm from tracking diagnoses based on traditional terrestrial clinical practice to one in which we also incorporate reported symptomology as potential antecedents of disease.

In this presentation we describe how characterization of reported signs and symptoms can be used to establish incidence rates for inflight immunologic events. We describe interdisciplinary data sources of information that are used in combination with medical information to analyze the data. We also delineate criteria for symptom classification inclusion. Finally, we present incidence tables and graphs to illustrate the final outcomes.

Using signs and symptoms reported via telemedicine, the epidemiologists provide summary evidence regarding incidence of potential inflight medical conditions. These results inform our NASA physicians and scientists, and support evaluation of the occupational health risks associated with spaceflight.